Paul Grigoras

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EDUCATION

PhD in Computing, Imperial College London   2013 − Now
- Methods, tools and architectures to optimise sparse matrix kernels on reconfigurable accelerators
- Thesis: *Instance Directed Tuning for Sparse Matrix Kernels on Reconfigurable Accelerators*
- Awards: EPSRC Doctoral Training Account Studentship, HIPEAC Paper Award

MEng in Computing, Imperial College London   2009 − 2013
- Masters course on Software Engineering and Computer Architecture
- Thesis: *Aspect Oriented Synthesis for Dataflow Engines*
- Awards: First Class Honours, Engineering Dean's List, SET UK Finalist, ARM Project Prize

Mihai Viteazul National College, Bucharest   2005 − 2009
- Romanian Baccalaureate: 97% Mathematics, 100% Physics, 97.9% Overall

WORK

SysAdmin, Custom Computing Group, Imperial College London   2013–Now

I manage a Linux cluster with 32 FPGAs, 8 CPU servers & 4 GPUs; I handle hardware & software installation, basic account management, monitoring and troubleshooting

Postgraduate Teaching Assistant, Imperial College London   2013 − Now

Helped with tutorials, materials and assessment for Operating Systems, Mathematical Methods, Advanced Programming, Computer Architecture, Custom Computing

Site Reliability Engineering Intern, Google   2013, 3 months

Worked on a monitoring console for production systems (JavaScript, Python, Closure)

Compiler Engineering Intern, Maxeler Technologies   2012, 6 months

Worked on a compiler, debugger and IDE for dataflow programming on FPGAs (Java, C)

Undergraduate Teaching Assistant, Imperial College London   2010–2012

Held weekly tutorials, marked and discussed exercises for Logic and Discrete Maths

Research Placement, Custom Computing Group   2011, 2 years

Worked on accelerating a medical imaging application using Maxeler FPGA systems

Summer Analyst in Technology, Morgan Stanley   2011, 3 months

Developed a web application for client account management (JavaScript, ExtJS, Java)

Skills

Programming	C++	MaxJ	Java	Python	Bash	JavaScript
Frameworks	LLVM	Boost	OpenMP	Intel MKL	MaxCompiler	Rose Compiler
Tools	git	Linux	Valgrind	GNU Make	CMake	vim/Emacs
	CLion	Eclipse	Travis CI	JUnit	Google Test	CTest

Projects

cask   https://github.com/caskorg/cask

Automated generation and tuning of sparse linear algebra architectures for FPGAs.

fastc   https://github.com/custom-computing-ic/fastc

My MEng thesis project - a compiler from C to a high-level hardware description language for FPGAs. Won Department of Computing ARM Project Prize and shortlised for Science and Technology awards UK. Used in two EU FP7 projects.

dfe-snippets   https://github.com/custom-computing-ic/dfe-snippets

Collection of designs, libraries and benchmarks for Maxeler MaxCompiler FPGA designs.

hydrogen   https://github.com/custom-computing-ic/hydrogen

Heterogeneous cloud that provides acceleration as a service using Maxeler FPGA nodes.

Selected Publications

P. Burovskiy, P. Grigoras et al., **Efficient Assembly for High-Order Unstructured FEM Meshes**, ACM Transactions on Reconfigurable Technology and Systems, ACM 2017

P. Grigoras et al., **dfesnippets: An Open-Source Library for Dataflow Acceleration on FPGAs**, International Symposium on Applied Reconfigurable Computing, Springer 2017

P. Grigoras et al., **Optimising Sparse Matrix Vector multiplication for large scale FEM problems on FPGAs**, International Conference on Field Programmable Logic and Applications, IEEE 2016

P. Grigoras et al., **CASK: Open-Source Custom Architectures for Sparse Kernels**, International Symposium on Field-Programmable Gate Arrays, ACM/SIGDA 2016

P. Grigoras et al., **Accelerating SpMV on FPGAs by Compressing Nonzero Values**, International Symposium on Field-Programmable Custom Computing Machines, IEEE 2015

P. Grigoras et al., **Elastic Management of Reconfigurable Accelerators**, International Symposium on Parallel and Distributed Processing with Applications, IEEE 2014

G. Chow, P. Grigoras et al., **An Efficient Sparse Conjugate Gradient Solver Using a Beneš Permutation Network**, International Conference on Field Programmable Logic and Applications, IEEE 2014

P. Grigoras et al., **Aspect Driven Compilation for Dataflow Designs**, International Conference on Application-Specific Systems, Architectures and Processors, IEEE 2013